Safe Motherhood in Massachusetts

Pregnancy-associated injury deaths: Violence, substance abuse, and motor vehicle collisions, 1990-1999

Massachusetts Department of Public Health

Public Health Council Meeting

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Outline

- Study overview and key terms
- Results of data analysis
- From review to action

History of pregnancy-associated death review in MA

1941-1980s: Case review by MA Medical Society

1980s-1996: No case review - surveillance only

1997: Maternal Mortality and Morbidity Review Committee (MMMRC) convened

- MDPH collaborators: BFCH, BHQM, Vital Records
- Other collaborators: Chief Medical Examiner, clinical community
- Review all deaths from 1995 onwards

Safe Motherhood

- **CDC campaign**
- **Promote well-being of women to help achieve healthy pregnancy, birth, and parenthood**
  - Prevent pregnancy-associated illness, injury, and death

Definitions and key terms

- **Maternal deaths**:

  Women who died while pregnant or up to 42 days following the end of pregnancy from causes related to or aggravated by pregnancy, but not including injuries. (WHO)

- **Pregnancy-associated deaths**:

  Women who died while pregnant or within one year following the end of pregnancy, from any cause including injuries. *Includes maternal deaths.* (CDC/ACOG)

Definitions and key terms

- **Medical deaths**:
  - Underlying cause of death was acute or chronic medical condition
  - May be related or unrelated to pregnancy
- **Injury deaths**:
  - Underlying cause of death was an injury
  - Injury may have been intentional, unintentional, or of undetermined intent

Case identification methods

- Death certificates
- Mandatory facility reporting to Division of Health Care Quality
- Infant birth and fetal death certificates linked to death certificates of women of reproductive age
- Newspaper reports
- Domestic violence organizations

Case review process

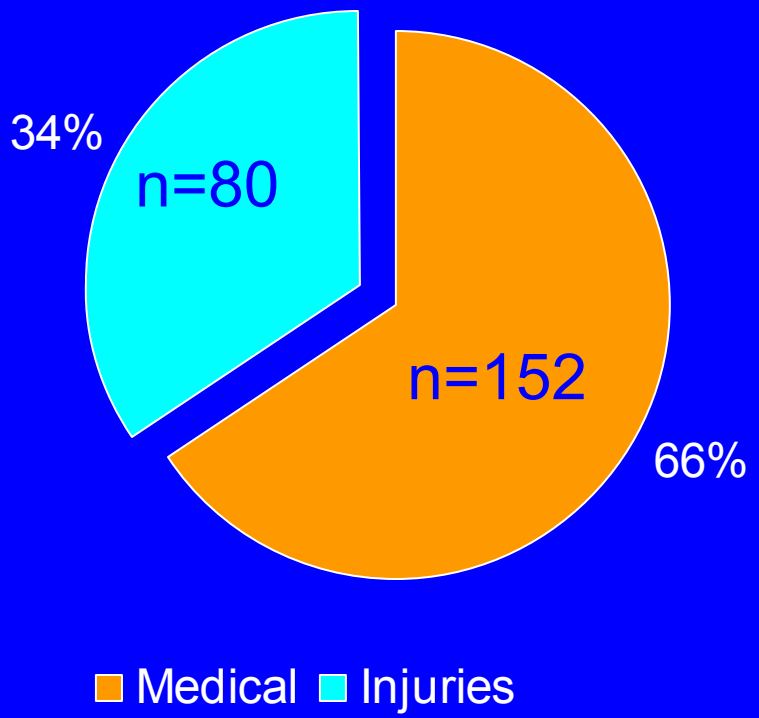
- Was the death pregnancy-related?
- Was the woman screened during birth hospitalization for violence, substance abuse, and depression?
- What public health, clinical, or institutional strategies might prevent similar deaths in the future?

Pregnancy-associated mortality ratio, Massachusetts, 1990-1999

Pregnancy-Associated Mortality Ratio (PAMR):

- # of pregnancy-associated deaths per 100,000 live births
- 1990-1999 aggregate PAMR = **27.2**

Distribution of injury and medical causes of pregnancy-associated death 1990-1999



- There were 232 pregnancy-associated deaths.
- Over one-third were injury-related.

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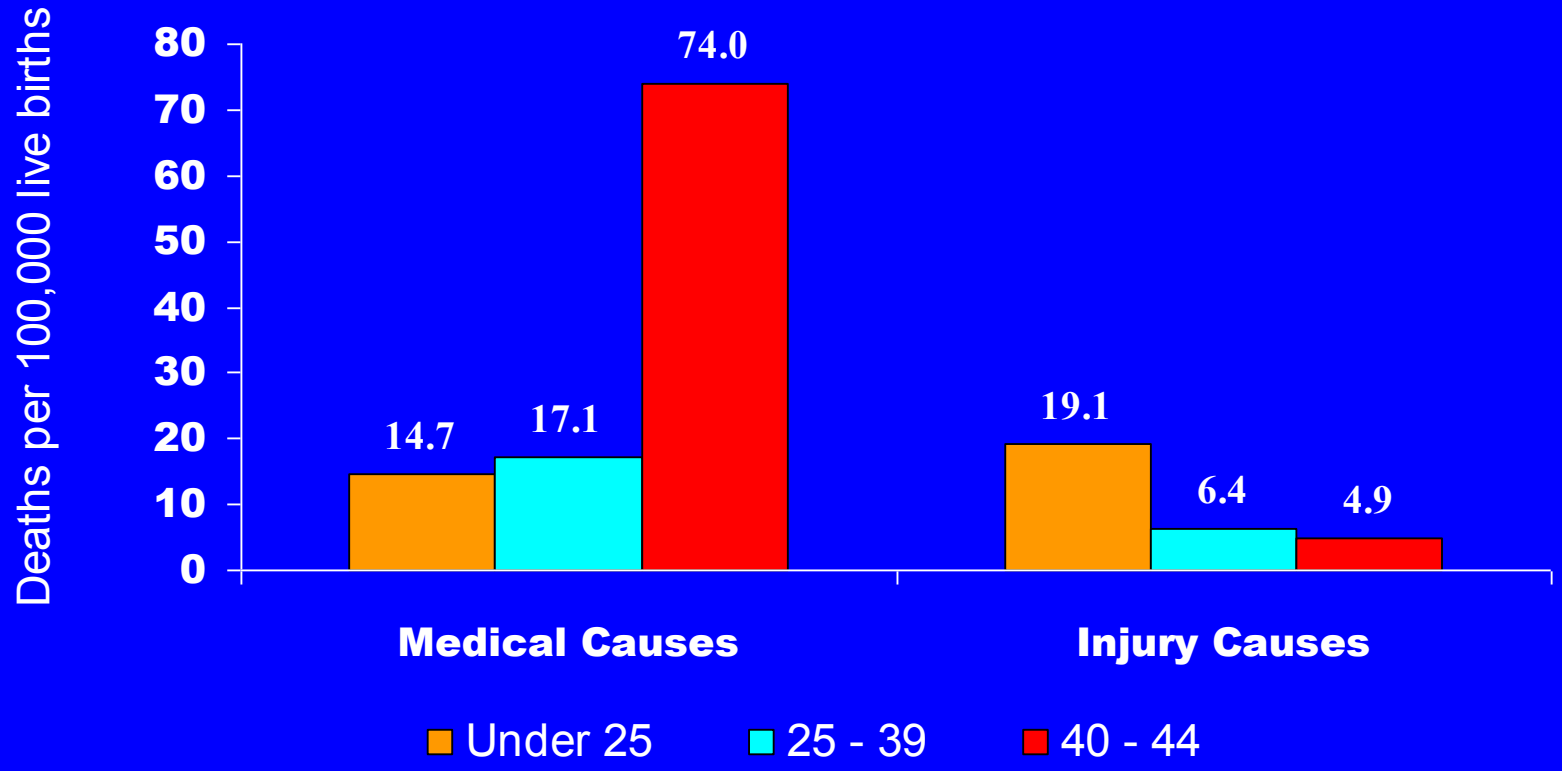
Leading causes of pregnancy-associated death 1990-1999

- **Homicide leading cause overall (n=30)**
  - 2 out of 3 were cases of domestic violence
- **Other leading causes of injury deaths:**
  - Motor vehicle collisions (n=21)
  - Drug overdose (n=16)
  - Suicide (n=7)
- **Leading causes of medical deaths:**
  - Cancer (n=28)
  - Acute and chronic respiratory conditions (n=23)
  - Cardiovascular disease and conditions (n=11)
  - Peripartum and postpartum cardiomyopathy (n=8)

PAMR* by age at delivery for medical and injury deaths, 1990-1999



* Pregnancy-associated mortality ratio: # of deaths per 100,000 live births

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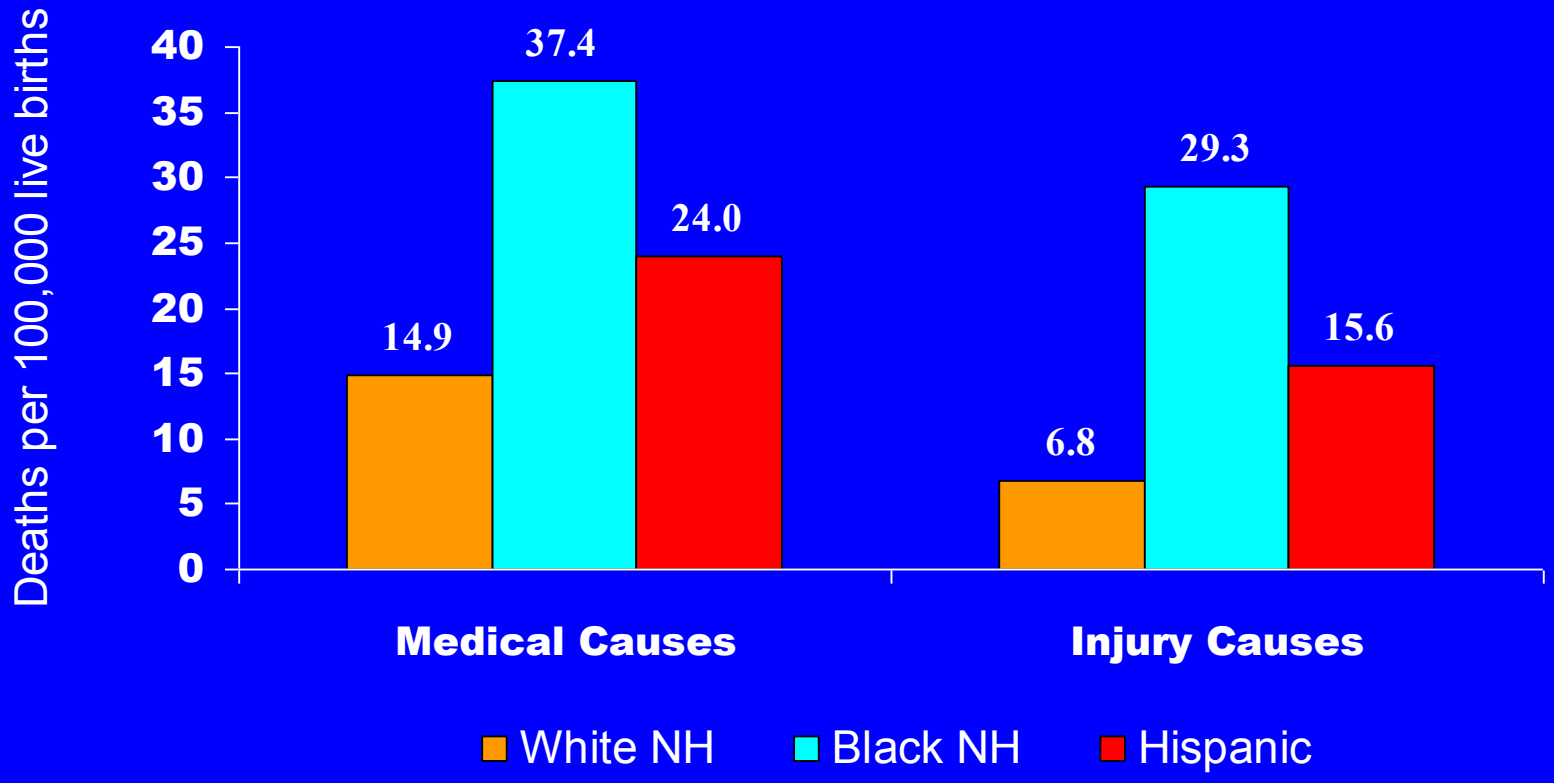
PAMR* by race and Hispanic ethnicity for medical and injury deaths, 1990-1999



* Pregnancy-associated mortality ratio: # of deaths per 100,000 live births

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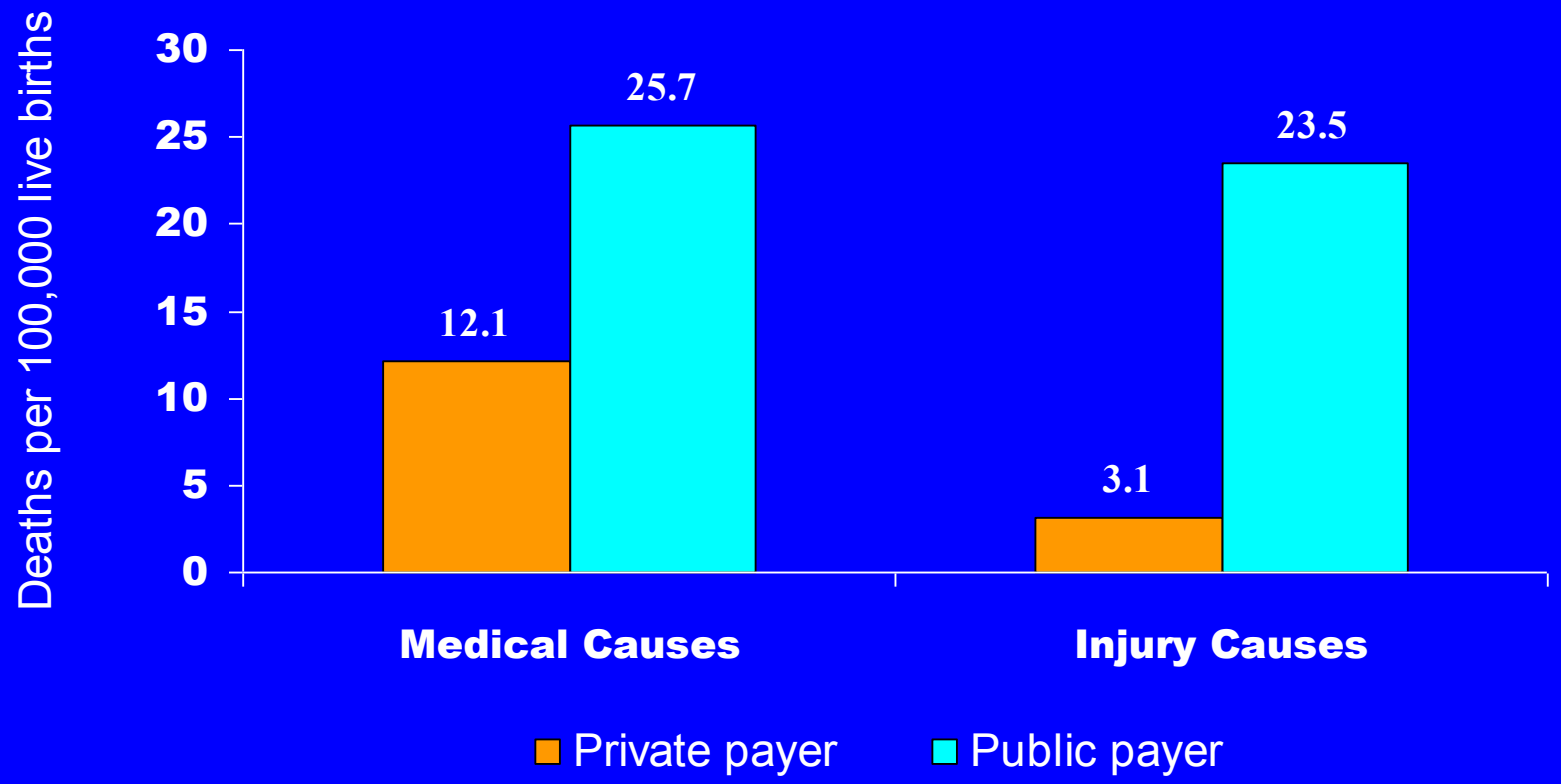
PAMR* by source of payment at delivery for medical and injury deaths, 1990-99



* Pregnancy-associated mortality ratio: # of deaths per 100,000 live births

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Prevention of future deaths

- All injury deaths are preventable from a public health perspective
- Future deaths may be averted by one or more changes in the following:
  - Clinical care
  - Facility infrastructure
  - Public health infrastructure
  - Patient factors

Summary of findings: Pregnancy-associated deaths in MA 1990-99

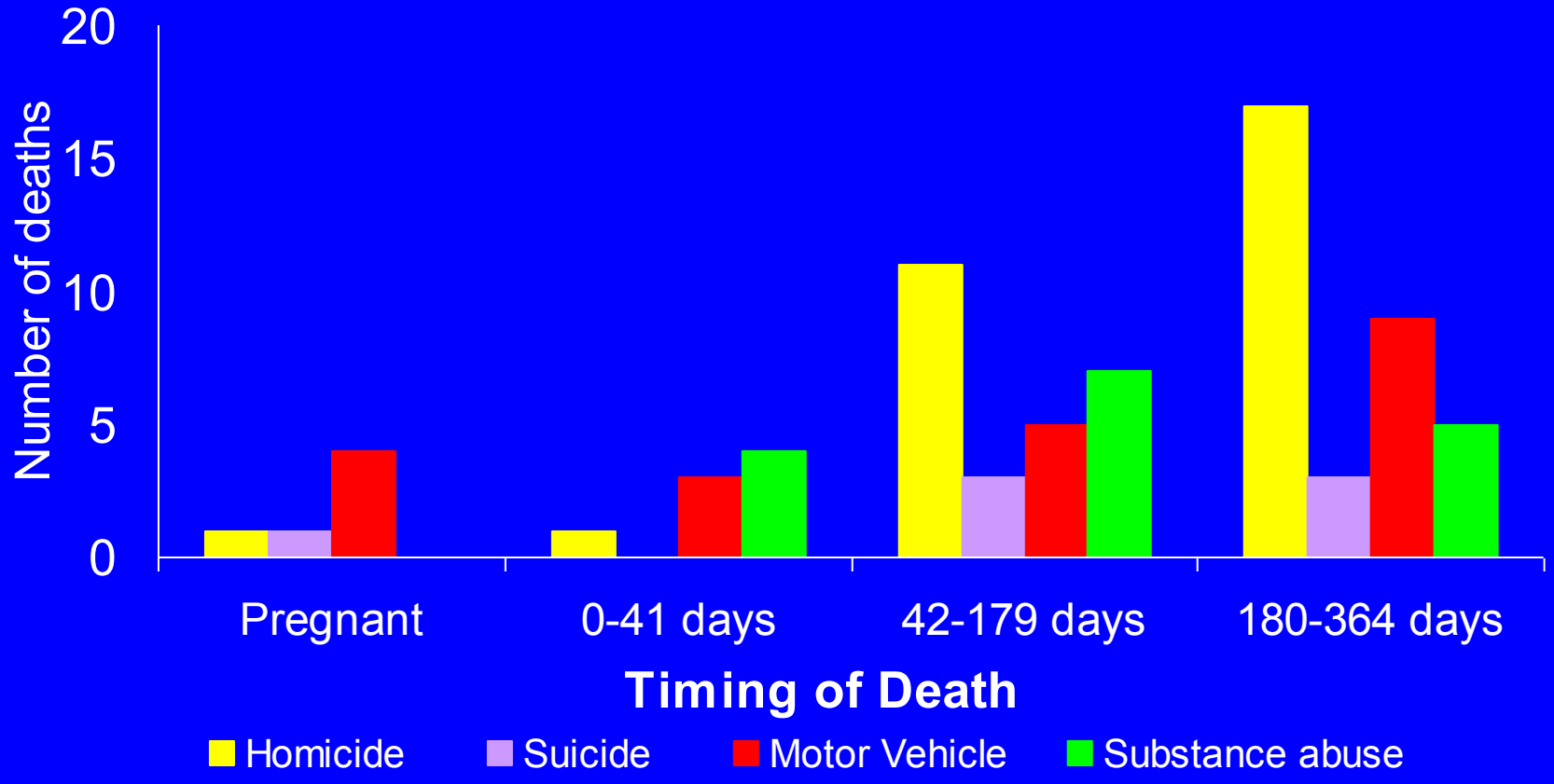
- 232 women died while pregnant or in the first year postpartum
- Disparities exist by
  - Age at delivery
  - Race and Hispanic ethnicity
  - Source of payment at delivery (Income level)
- Injuries account for one-third of all pregnancy-associated deaths and are preventable
- Homicide was leading cause of death
  - 2 out of 3 homicides were cases of domestic violence

Moving from data and review to action

Periods of risk

- Pregnancy
- Early postpartum (0-41 days)
- Late postpartum
  - 42-179 days
  - 180-364 days

Number of injury deaths by cause and period of risk, 1990-1999



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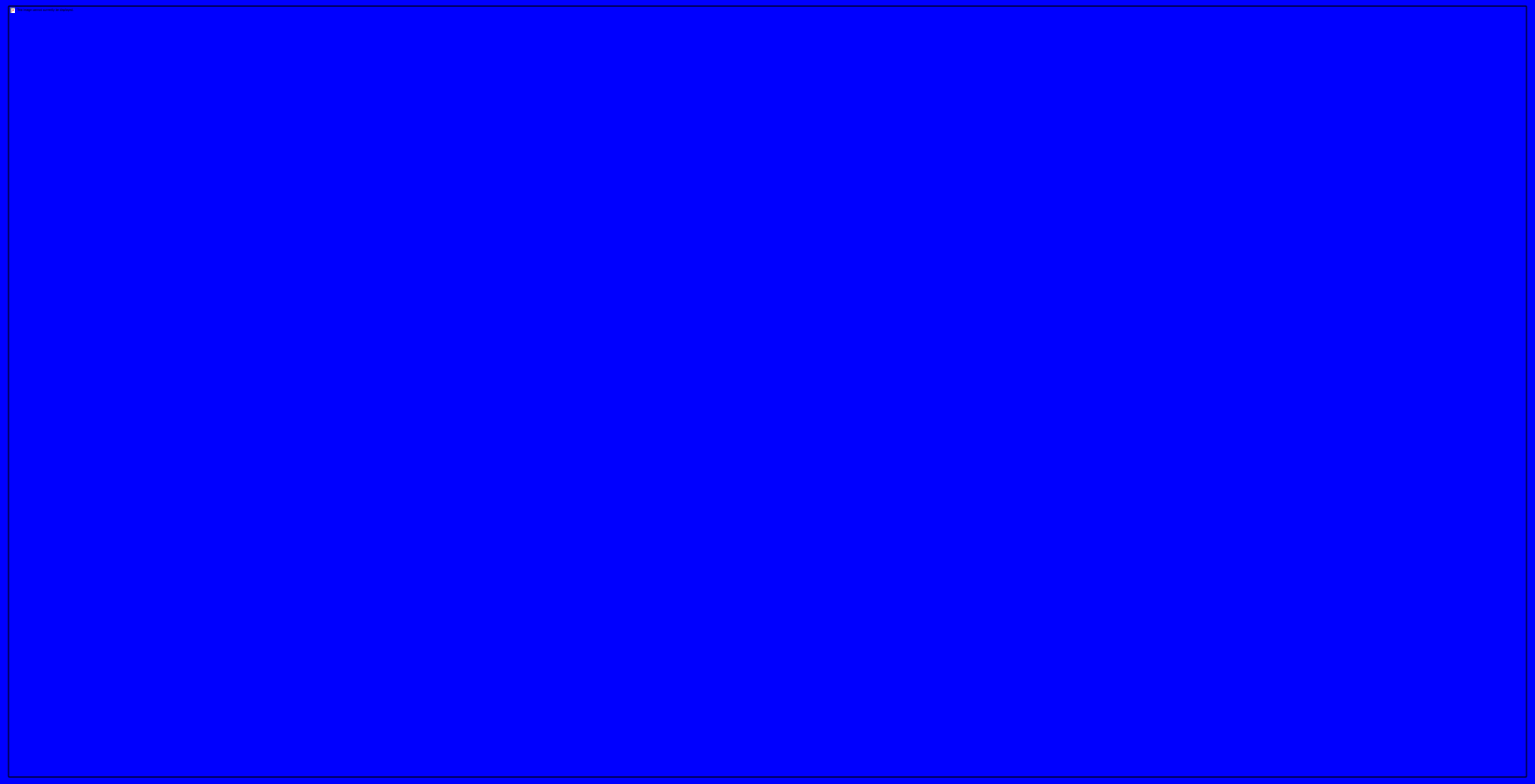
Opportunities - Number of provider visits by period of risk, 1990-1999



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Steps to Support Safe Motherhood

All providers of services and care to women and infants:

- Educate all women about domestic violence, postpartum depression, substance use and proper seat belt use
- Screen and re-screen all women for domestic violence, depression, suicide risk, substance use & seatbelt use
  - At regular intervals, including late postpartum
- Document screening results and injuries
- Advise & counsel women about resources & support

Steps to Support Safe Motherhood

- Institute policies and protocols to standardize approaches
- Reduce stigma associated with these issues
- Respect the culture and recognize the complexity of women's lives
- Create a comprehensive community response to improve the health of women
- Work for policy changes that support women
  - Continuity of services beyond obstetrical care
  - Mental health parity issues

Conclusions

- Preventable causes of injury-related deaths indicate we need a public health approach to prevention
- Many deaths occur in the late postpartum period when women don't receive many services
- Strategies need to address the timing of these deaths and enlist pediatric and adult primary care providers to join obstetrical providers in prevention efforts

Many thanks!

- Members of Maternal Mortality & Morbidity Review Committee
- Community providers from injury prevention & substance abuse programs & clinical providers who participated in DPH summit to formulate strategies
- Co-Authors of Report
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